REMARKS

Claims 1-12 are pending in the application, of which Claims 1, 7 and 12 are independent claims. Claims 6 and 9 stand rejected under 35 U.S.C. § 112. In response, the claims have been amended. Claims 1, 2, 5, 6, and 12 stand rejected under 35 U.S.C. § 102(e). These rejections are traversed. Finally, Claims 1, 3-4, 7-9, and 10-11 stand rejected under 35 U.S.C. § 103(a). These rejections are also traversed. In addition, new claims have been added to more distinctly claim the invention.

Regarding Rejections under 35 U.S.C. § 112, Second Paragraph

Claims 6 and 9 have been rejected under 35 U.S.C. § 112, second paragraph, as being deemed indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicants regard as the invention.

As suggested by the Examiner, the Applicants have amended Claims 6 and 9 to provide two choices for selecting between the figure of merit. Amended Claim 6 recites "selecting between the proposed figure of merit and the alternate figure of merit." Amended Claim 9 recites "selecting between the proposed node figure of merit and the alternate node figure of merit." As such, amended Claims 6 and 9 provide at least two choices for selecting the figure of merit.

Reconsideration and withdrawal of claim rejections based on 35 U.S.C. § 112, second paragraph, are respectfully requested in view of these amendments.

Regarding Rejections under 35 U.S.C. § 102(e)

Claims 1, 2, 5, 6, and 12 are rejected under 35 U.S.C. § 102(e) based on U.S. Patent No. 6,192,401 to Modiri.

To establish a prima facie case for anticipation under 35 U.S.C. §102(e), the cited referenced must teach every element of the claim. As stated by the Federal Circuit, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *See Verdegal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d (BNA) 1051, 1053 (Fed. Cir. 1987). Specifically,

"The identical invention must be shown in as complete detail as contained in the ... claim." *See Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d (BNA) 1913, 1920 (Fed. Cir. 1989). The Applicants respectfully submit that Modiri neither discloses nor suggests the limitations of the Applicants' claimed invention.

The Applicants claim a technique for providing a figure of merit indicating a value for a member node of a partitioned network cluster to continue operating. A management program queries an application program executing on the partitioned network for the figure of merit. The application program determines the figure of merit. The figure of merit is returned from the application program to the management program.

The Applicants' claimed technique advantageously queries an application program executing on a partitioned network cluster for a vote on whether a node in the partitioned network cluster should continue operating. (*See* Specification, pg. 16, ll. 12-15). Specifically, the application program's vote is a figure of merit, which is an indication of the value of the node to the application program. (*See* Specification, pg. 17, ll. 8-10). The value can be based on the number of users executing the application program from the node, as set forth in Claims 3 and 10. The value can also be based on the execution priority of the application program, as set forth in Claims 4 and 11. For example, if the application program is a payroll application or a billing application it can have a particular execution priority. (*See* Specification, pg. 17, ll. 13-15).

In comparison, Modiri discusses cluster management software that is configured to detect errors in a network cluster and determine membership in the network cluster. When an error is detected, each node executes cluster management software that determines which nodes should have membership in the cluster. Membership in the cluster is based on weighting values that are assigned to each node. The value assigned to a node is an indication of the node's ability to perform in the cluster. For example, a value assigned to a node can be based on the processing speed of the node. (*See* Modiri, col. 2, ll. 20-39).

Modiri does not discuss the Applicants' claimed querying of an application program executing on the partitioned network cluster for the figure of the merit, as set forth in Claims 1 and 12. Specifically, Modiri bases node membership according to a node's value assigned by cluster management software, whereas the Applicants' claimed invention requires that a

management program query an application program for the figure of merit. As such, Modiri does not suggest that a management program query an application program for the figure of merit, as set forth in Claims 1 and 12.

In fact, Modiri does not even discuss or suggest involving an application program in determining the figure of merit. Modiri's discussion of application programs is limited to protecting application programs from failures. For example, Modiri discusses that applications can be monitored for failures. (*See* Modiri, col. 5, ll. 14-20). Modiri also discusses that "[i]t is desirable that the applications running on the cluster continue running without corruption of files or data." (*See* Modiri, col. 6, ll. 18-20). Modiri, however, does not discuss querying an application program for a node's figure of merit. Rather than querying an application program for the figure of merit, Modiri teaches to protect application programs from error. Thus, Modiri does not suggest that application programs take part in the figure of merit.

More specifically, Modiri does not discuss the Applicants' claimed limitation of querying an application program that is executing on a partitioned network cluster. In particular, Modiri does not suggest that an application program is executing at all when the management software is determining a node's value. For example, Modiri's Figure 4 lists the steps of determining node membership with respect to the node's value, and Modiri does not discuss that an application is executing on a partitioned cluster. Whether an application program is executing on the partition is inconsequential to Modiri's determination of a node's value. Specifically, Modiri determines a node's value independent of application programs executing on a partitioned network cluster.

Moreover, Modiri does not discuss the Applicants' claimed technique of determining the figure of merit by the application program. That is, the Applicants' claimed application program executing on the partitioned network cluster determines a value (figure of merit) associated with its node. Instead of an application program determining a node's figure of merit, Modiri discusses that the cluster management software of a node determines a node's value. As such, Modiri does not discuss that an application program executing on the partitioned cluster determines a node's value. Instead, Modiri teaches that cluster management software determines a node's value.

Although Modiri discusses that its approach to determining a node's value may be implemented in software, Modiri's discussion of software is not directed to the Applicants' claimed application program executing on a network cluster partition. Specifically, Modiri states that cluster management software determines a node's value. There is no suggestion in Modiri that its cluster management software is the same as the Applicants' claimed application program executing on a partitioned network cluster.

In fact, Modiri distinguishes between cluster management software and application programs running on a cluster. For example, referring to Figure 2, Modiri depicts the software layers that may be found in a system configured as a cluster. In Figure 2, Modiri depicts the software layers as cluster management software (250), a data service module (240), and a cluster framework (220). For illustrative purposes, Modiri's Figure 2 is shown below.

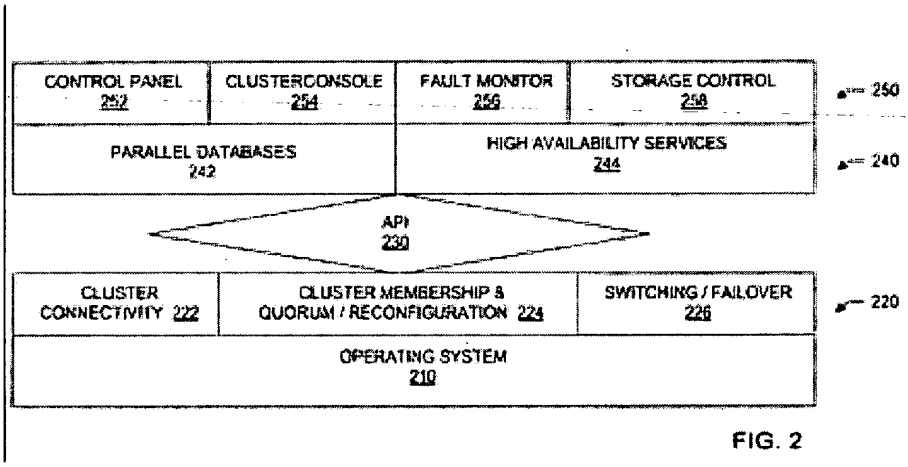


FIG. 2

As shown in Figure 2, Modiri illustrates that the cluster management software (250) and the data service module (240) are distinct layers of software. Although, Modiri's data service module (240) is not exactly the same as the Applicants' claimed application program executing on the partitioned network cluster, Modiri's data service module can arguably be considered an application program layer. For example, Modiri discusses that the data service module (240) is specific to data service applications, such as file services, databases, Internet services, etc. (*See* Modiri, col. 5, ll. 21-33).

According to Modiri, the cluster management software (250) and the cluster framework (220) determine a node's value of membership. Specifically, Modiri discusses that the cluster

management software (250) and the cluster framework (220) are typically responsible for determining the membership in the cluster. (*See* Modiri, col. 6, ll. 32-34). Modiri does not, however, discuss that an application program determines a node's value as a figure of merit. Thus, Modiri does not discuss the limitations of the Applicants' claimed invention.

As such, Modiri does not teach or suggest the requirements of the Applicants' claimed invention. In summary, Modiri does not teach or suggest the Applicants' claimed technique of querying an application program executing on a partitioned network cluster for the figure of merit, as set forth in the Applicants' Claims 1 and 12. Nor does Modiri teach or suggest an application program that determines the figure of merit and returns the figure of merit. Instead, Modiri employs a management program to determine a node's value. Thus, Modiri neither discusses the limitations nor the advantages of the Applicants' claimed invention.

Accordingly, for each claim rejection under 35 U.S.C. §102(e), the Office has not established a prima facie showing of anticipation because Modiri does not discuss all the limitations of the Applicants' claimed invention. As such, the Office has not met its burden in establishing a prima facie showing under 35 U.S.C. §102(e). Consequently, the rejections under of Claims 1 and 12 under 35 U.S.C. §102(e) should be removed.

Claims 2, 5 and 6 depend from base Claim 1, and have been rejected under 35 U.S.C. § 102(e). As the dependent claims incorporate all limitations from the corresponding base claim, allowance of the dependent claims follows from allowance of the base claim. Because the base claim is in condition for allowance, the dependent claims should also be allowed. Reconsideration of the rejections under 35 U.S.C. § 102(e) is respectfully requested.

Regarding Rejections under 35 U.S.C. § 103(a)

Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) based on Modiri in view of U.S. Patent No. 5,325,526 to Cameron. Claims 1, and 7-9 are rejected under 35 U.S.C. § 103(a) based on Modiri in view of U.S. Patent No. 5,999,712 to Moiin. Claims 10 and 11 are rejected under 35 U.S.C. § 103(a) based on Modiri and Moiin in view of Cameron. For brevity, the Applicants will only highlight certain areas where the Office has failed to make a prima facie showing of obviousness under 35 U.S.C. §103(a). In order to establish a prima facie showing of obviousness, three basic criteria must be met, as described in M.P.E.P. § 2142:

(1) There must be some suggestion, or motivation, to modify the reference or combine the reference teachings;

(2) There must be a reasonable expectation of success; and

(3) The prior art reference, or combined references, must teach or suggest all the claim limitations.

Addressing the rejection of Claim 1, Modiri and Moiin, taken separately or in combination, do not disclose the claim limitations of the Applicants' Claim 1. Specifically, the references do not disclose the Applicants' claimed:

- **querying**, by a management program, an **application program executing on** the **partitioned network cluster** for the figure of merit;
- **determining, by** the **application program**, the figure of merit; and
- **returning** the figure of merit **from** the **application program** to the management program.

Neither reference discloses or suggests the Applicants' claimed querying of an application program for the figure of merit. Modiri does not query an application program as discussed in Claim 1. Modiri's cluster management program simply determines the value of a node. Further, Modiri does not suggest any relationship between the management program and an application program regarding the figure of merit. Likewise, Moiin does not teach anything about querying an application program for figure of merit. Instead, Moiin determines node membership by a quorum of nodes. That is, Moiin discusses that all nodes must agree on the

members of the cluster. Thus, neither reference discusses that an application program is queried for a figure of merit of a node. As such, the references do not teach the requirements of the Applicants' claimed invention.

Moreover, neither reference discloses or suggests the Applicants' claimed application program that determines the figure of merit. Specifically, neither reference teaches anything about an application program executing on a partitioned network that determines the figure of merit. To begin with, neither Modiri or Moiin suggest that an application program determines a node's value. In particular, Modiri discusses that cluster management software determines a node's value, and Moiin discusses that a quorum of nodes determine membership of the cluster. As such, neither reference suggests the Applicants' claimed application program that determines the figure of merit.

Furthermore, neither reference discloses or suggests the Applicants' claimed application program that returns the figure of merit to the cluster management program. Specifically, neither reference discusses any interchange of values relating to the figure of merit between an application program and a cluster management program. Thus, the references do not disclose the limitations of the Applicants' claimed invention.

The Office has not established that Modiri or Moiin, take separately or in combination, teaches or suggests the Applicants' Claim 1. Accordingly, the Office has not met its burden in establishing a prima facie showing of obviousness under 35 U.S.C. § 103(a). Reconsideration of the rejection of Claim 1 under 35 U.S.C. § 103(a) is respectfully requested.

Addressing the rejection of Claim 7, Modiri and Moiin, taken separately or in combination, do not disclose the limitations of the Applicants' Claim 7. Specifically, the references do not disclose the Applicants' claimed:

- evaluating a **partition figure of merit** for each cluster partition;
- **requesting**, from an **application program** executing on the cluster partition, a **node figure of merit**;
- a node figure of merit, **indicating a value to the application program** for a member node, on which the application is **executing**, to continue operation;

- providing, **from** the **application program**, the requested node figure of merit;
- evaluating the provided node figure of merit to determine the partition figure of merit;
- **selecting**, in response to the partition figure of merit, **a cluster partition** to operate as the network cluster; and
- halting operation of the remaining cluster partitions.

Neither reference discloses or suggests the Applicants' claimed evaluating of a partition figure of merit for each cluster partition. Modiri's values relate to node membership and not to the value of a partition. In addition, Modiri does not determine values for each partition. Moiin, on the other hand, does not even relate to evaluating a partition figure of merit because Moiin is directed determining membership based on a quorum of nodes. Neither reference contemplates evaluating a partition figure of merit because the references do not teach to evaluate the merit of cluster partitions. As such, the references do not disclose the evaluating a partition figure of merit requirement of the claimed invention.

Moreover, neither reference discloses or suggests the Applicants' claimed figure of merit indicating a value to the application program. Specifically, there is no teaching, or suggestion in either reference of a value that has any relationship to an application program. That is, neither reference suggests that a value assigned to a node is indicative of the node's value to an application program.

Furthermore, neither reference discloses or suggests the Applicants' claimed selecting a partition cluster to operate in response to the partition figure of merit. Instead of selecting partitions to operate, Modiri determines members of a cluster and then reconfigures the cluster. Modiri does not suggest selecting partitions. Furthermore, neither reference discusses that a partition is selected in response to a partition figure of merit. Specifically, neither reference relates to selecting a partitioned cluster to operate.

In view of the foregoing, the Office has not established that Modiri or Moiin, taken separately or in combination, teaches or suggests the Applicants' Claim 7. Accordingly, the Office has not met its burden in establishing a prima facie showing of obviousness under 35

U.S.C. § 103(a). Reconsideration of the rejection of Claim 7 under 35 U.S.C. § 103(a) is respectfully requested.

Addressing the rejections of Claims 3 and 4, Modiri and Cameron, taken separately or in combination, do not disclose the claim limitations of the Applicants' invention. To begin with, Cameron in non-analogous art. Specifically, Cameron does not relate to partitioned network clusters. Instead of partitioned network clusters, Cameron is directed to a task scheduler that allocates resources from "partitions" on disk storage to application programs. Specifically, Cameron does not discuss partitioned clusters but rather discusses "partitions" on disk storage which are objects comprising a plurality of items of information and related processing functions for maintaining a logical environment for the execution of tasks of one or more application programs. (*See* Cameron, Abstract). Cameron's task scheduler facilitates executing a plurality of application programs running on disk partitions. Cameron's teachings are not related to the Applicants' claimed invention.

Cameron does not disclose the Applicants' claimed determining a node's merit criteria which indicates a value for a member node of a partitioned network cluster. In particular, Cameron neither teaches or suggests the Applicants' claimed merit criteria for a member node, which includes determining an execution priority of the application program, as set forth in Claim 4. Cameron discusses creating a partition on disk storage and linking or writing an application data block to that partition. Cameron discusses that when an application data block is linked or written to a partition it may include a priority status associated with the application program. Cameron's teachings relate to disk partitions and allocating resources for applications to that disk partition. Thus, Cameron's teachings are directed to a different type of partition and thus are not related to the Applicants' Claim 4.

Modiri does not disclose determining a number of users executing the application program from the member node, as set forth in Claim 3. Specifically, Modiri teaches away from the Applicants' claimed invention because Modiri favors the fastest node, and assigns a value based on the processing power of the node. Modiri does not teach anything about basing a node's value on the number of users executing an application program.

In particular, the Applicants' Claim 3 requires merit criteria that includes determining the number of users executing the application program from the member node. Modiri does not teach anything about the relevance of the number of users executing an application program. Thus, Modiri does not discuss the limitations of Applicants' Claim 3.

The Office has not shown that Modiri and Cameron teach or suggest the limitations of the Applicants' Claims 3 and 4. As such, the Office has not met its prima facie burden under 35 U.S.C. §103(a). Reconsideration of the rejections of Claims 3 and 4 under 35 U.S.C. § 103(a) are respectfully requested.

In summary, for each claim rejection under 35 U.S.C. § 103(a) the Office has not established a prima facie showing of obviousness. First, the Office has not shown that the references disclose the limitations of the claimed invention. For example, one basic requirement of the Applicants' claimed technique is querying an application program executing on a partitioned network cluster. The Office has not shown that the references disclose or suggest this claim limitation. Second, the Office has not shown that the references provide a reasonable expectation of success. Specifically, the references do not enable one skilled in the art to achieve the Applicants' claimed invention. A prior art reference is not enabling when it provides "only general guidance as to the particular form of the claimed invention or how to achieve it." (Citations omitted; internal quotations omitted). *In re Roemer*, 258 F.3d 1303, 1310, 59 U.S.P.Q.2d (BNA) 1527, 1533 (Fed. Cir. 2001) (requiring that the prior art disclosure suggest a reasonable probability of success). Finally, the Office has not provided any suggestion or motivation to combine the references. Accordingly, the Office has not met its burden in establishing a prima facie showing of obviousness under 35 U.S.C. §103(a).

Reconsideration of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

New Claims

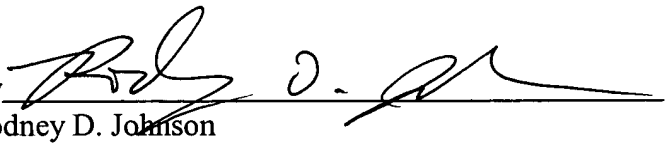
New Claims 13-20 are being added to the application. No new matter is being introduced. Acceptance and allowance are respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned attorney at (978) 341-0036.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 

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Dated: October 17, 2002

MARKED UP VERSION OF AMENDMENTS

Specification Amendments Under 37 C.F.R. § 1.121(b)(1)(iii)

Replace the paragraph at page 1, lines 5 through 16 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

Serial No. [_____] 09/321,090, filed May 28, 1999, entitled A QUORUMLESS CLUSTER USING DISK-BASED MESSAGING, by Richard Frank, Michael Cusson, Joydip Kundu, and Daniel E. O'Shaughnessy, inventors;

Serial No. [_____] 09/321,998, filed May 28, 1999, entitled AVOIDING N-SQUARED HEARTBEAT MESSAGING PROBLEM IN AN OPERATING CLUSTER VIA CLOSED LOOP MESSAGING THEME, by Richard Frank, Michael Cusson, Joydip Kundu, and Daniel E. O'Shaughnessy, inventors;

Serial No. [_____] 09/322,472, filed May 28, 1999, entitled USING A CLUSTER-WIDE SHARED REPOSITORY TO PROVIDE THE LATEST CONSISTENT DEFINITION OF THE CLUSTER (AVOIDING THE PARTITION-IN-TIME PROBLEM), by Joydip Kundu, Richard Frank, Michael Cusson and Daniel E. O'Shaughnessy, inventors.

Replace the paragraph at page 10, lines 4 through 9 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

As described above in conjunction with FIG. 2, the cluster manager 32, in concert with the cluster managers residing on [nodes_ 2 - 4] nodes_2 - node_4 14, 16, 18, manages cluster connectivity within the quorumless cluster 10. For the cluster managers to effectively cooperate in the connectivity management endeavor, a facility for sharing data is provided. The shareable storage device 22 of FIG. 1 houses a repository for this data sharing facility.

Replace the paragraph at page 21, lines 3 through 22 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

A quorumless network cluster [is described which] provides a highly available system by addressing the partition-in-space and partition-in-time problems in network clusters.

[This solution provides a] In a particular solution, a cluster manager (CM) [which uses] can use disk based messaging to manage the operation of the cluster. Each node within the cluster must have access to a shared disk to operate within the cluster. [In the case of a partition-in-space problem, where a subset of nodes maintains full network connectivity among the nodes within the set but has no connectivity between the sets, the CM queries an application, operating on the cluster, to provide input to the CM to select which subset of nodes will survive as the cluster.]

[Also described is a] A particular methodology [for operating] can operate the cluster in a closed loop between nodes 1 to N. [Each node sends a single heartbeat message to the node ahead of it in the loop and receives a single heartbeat message from the node behind it in the loop.] If a node fails to receive a heartbeat message from its predecessor in the loop, it initiates a cluster reconfiguration by sending a reconfiguration message to each other node in the cluster.

The quorumless cluster [also provides] can also include a common storage for a cluster definition. [A single node is designated as the coordinator node of the cluster.] Each node may provide a proposed change to the cluster definition, however only [the] a single coordinator node may update the cluster definition and apply the suggested changes.]

Claim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

6. (Amended) The method of Claim 5 wherein determining the figure of merit includes:

[selecting between the proposed figure of merit and] determining an alternate figure of merit derived by assessing merit criteria for the member node; and

selecting between the proposed figure of merit and the alternate figure of merit.

9. (Amended) The method of Claim 8 wherein providing the requested node figure of merit includes:

[selecting between the proposed node figure of merit and] determining an alternate node figure of merit derived by assessing merit criteria for the member node; and

selecting between the proposed node figure of merit and the alternate node figure of merit.